ABSTRACT

A method and arrangement are disclosed for increasing the depth contrast in microscope imaging. The method and implementation described can be designated as structured illumination for generating quasi-confocal optical sections. In implementing the method, a grating structure located in the field diaphragm plane of a microscope, the object plane and the TV intermediate image plane of a microscope are arranged confocally. The term "confocally" refers to the fact that the grating, object and the intermediate image plane are positioned on optically conjugate planes. By this arrangement, the grating structure is projected in the object plane of the microscope and the object which is structured in this way is imaged in the TV intermediate image plane of the microscope by the optical system following it. Optical sections are generated by calculating the modulation depth of the structured object. Three-dimensional acquisition of the object is achieved in that the object is imaged in a plurality of focus planes at right angles to the direction of observation and is detected using an array detector (e.g., CCD camera). The method and implementation of structured illumination described herein can primarily be used in reflection microscopy and fluorescence microscopy. In principle, the method can be applied for all linear interactions between light and matter. The use of the method is likewise not limited to the field of microscopy.